

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Claims.

a3 1. (Amended) A semiconductor device on a silicon substrate, having a device structure including an insulating film formed from gas containing carbon, comprising:

5 a contact³⁰ which penetrates an interlayer insulating film²⁶ and is electrically connected with a diffusion layer in the silicon substrate;

a gate electrode^{16, 18} which is formed on the silicon substrate and contains a nitride film^{20, 22} at upper and side portions;

10 a silicon nitride film^{30, 32} for preventing carbon diffusion, which is formed on the silicon substrate while traversing a region except a portion for providing the electrical connection between the contact and the diffusion layer, and is formed on the nitride film at the upper and side portions of the gate electrode.

2. (Amended) The semiconductor device according to claim 1, wherein:

15 the insulating film includes tantalum oxide (Ta_2O_5); and

the semiconductor device is a dynamic random access memory having a memory cell capacitor film including the tantalum oxide.

Please cancel claims 3 to 6.

20 a4 21. (New) A semiconductor device on a silicon substrate, having a device structure including an insulating film formed from gas containing carbon, comprising:

a contact³⁰ which penetrates a first interlayer insulating film²⁶ and is electrically connected with a diffusion layer in the silicon substrate;

25 a capacitor⁴⁶ contact that is interposed between a lower electrode of a memory cell capacitor and the contact while penetrating a second interlayer insulating film³² and a third interlayer insulating film³²;

a conductor^{37, 38} which is formed on the second interlayer insulating film and contains a nitride film³⁶ at upper and side portions;

30 a silicon nitride film^{35, 40} for preventing carbon diffusion, which is formed on the third interlayer insulating film³² while traversing a region except a connection

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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cont.

portion between the lower electrode and the capacitor contact, and is formed above the nitride film at the upper portion of the conductor.

22. (New) The semiconductor device according to claim 21, wherein:

5 the insulating film includes tantalum oxide (Ta_2O_5); and

the semiconductor device is a dynamic random access memory having a memory cell capacitor film including the tantalum oxide.

23. (New) A semiconductor device on a silicon substrate, having a device structure including an
10 insulating film formed from gas containing carbon, comprising:

a contact³⁰ that is electrically connected with a diffusion layer formed in the silicon substrate while penetrating a first interlayer insulating film, the contact is electrically connected to a capacitor contact⁴⁶ that is interposed between a lower electrode of a memory cell capacitor and the contact while penetrating a second³² interlayer insulating film and a third⁴² interlayer insulating film for providing an electrical connection between the lower electrode and the contact;

15 a conductor^{32, 34} which is formed on the second interlayer insulating film and contains a nitride film^{36, 40} at upper and side portions;

20 a silicon nitride film^{38, 44} for preventing carbon diffusion, which is formed between the second and third interlayer insulating film while traversing a region except a connection portion between the lower electrode and the capacitor contact, and is formed on the nitride film at the upper and side portions of the conductor.

24. (New) The semiconductor device according to claim 23, wherein:

25 the insulating film includes tantalum oxide (Ta_2O_5); and

the semiconductor device is a dynamic random access memory having a memory cell capacitor film including the tantalum oxide.